Depression and health related quality of life among HIV-infected people

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Abstract. – *Background and Objectives:* Little is known about the impact of comorbid psychiatric symptoms in health related quality of life (HRQL) in patients with HIV infection. The aim of this investigation was to describe depressive symptoms and the impact in HRQL in HIV infected people.

Materials and Methods: A cross-sectional study over 150 HIV-outpatients in a tertiary hospital was designed. Depression data were obtained using the Beck Depression Inventory, Second Edition (BDI-II) inventory. HRQL data were collected by disease-specific questionnaire MOS-HIV. Researchers' team designed a specific template to get rest of the data.

Results: Almost three-quarters of the population were men. After adjusting for gender and age, HIV-related symptoms and presence of depression were found to be negatively associated with all the Medical Outcomes Study HIV Health Survey (MOS-HIV) general domains and in the Physical Health Summary score and Mental Health Summary score.

Conclusions: Optimization of HRQL is particularly important now that HIV is a chronic disease with the prospect of long-term survival. Quality of life and depression should be monitored in follow-up of HIV infected patients. Comorbid psychiatric conditions may serve as markers for impaired functioning and well-being in persons with HIV.

Key Words:

Quality of Life, Depressive Symptoms, HIV Infections/psychology, Life Change Events, Depression Score.

Introduction

The World Health Organization defines Mental Health as "*an integral component of health through which one realizes one's own cognitive, affective and relational abilities. With a balanced mental disposition, one is more effective in coping with the stresses of life, can work productively and fruitfully and is better able to make a positive contribution to the community*"[1]. In terms of the psyche, Mental Health includes; sadness, demoralization, loss of self-esteem and lack of interest; in the physical field it expresses itself as asthenia, adynamia, hypoactivity, anorexia, weight-loss and sleep difficulties. Comorbidity with depression in chronic physical illnesses such as arthritis, cancer, heart disease, diabetes or HIV infection is well established and persons with one or more chronic illness present a greater risk of depression[2,3]. Alternatively, comorbidity with depression worsens the state of health in patients with chronic illness and reduces levels of Health Related Quality of Life (HRQL) in physical and mental domains[2,4].

HIV infection causes a strong impact throughout its entire process; recently the biological perspective has extended to include psychological perspectives as well. Problems with mental health related to HIV infection are quite frequently due to stressful events such as the emotional impact of diagnosis; possible rejection from family, professional and social life; the fact that discrimination and stigmatization are still associated with the disease; clinical manifestations; chronic course of the disease and side-effects of certain antiretroviral medications such as zidovudine. Almost half of patients will require psychological treatment and a significant number will demonstrate greater psychopathological disturbances than general population[5-7].

Psychological manifestations most often associated with HIV infection are depressive syndromes, given that infection is a risk factor for development of psychological pathology. In addition, high levels of depression have been found in individuals with high-risk behaviours for HIV in-

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fection[8]. The prevalence of depression among HIV infected people, according to diverse series, varies between 4% and 30% and affects women and homosexuals more frequently[5,8-10].

A diagnosis of depression is often complicated since some of its symptoms can also be manifestations of organic illnesses such as AIDS dementia complex; dementia symptoms in the initial stages of the disease; endocrine and metabolic illnesses such as hypothyroidism; hypothalamic-hypophyseal axis alterations; hypovitaminosis and electrolyte disturbances; anaemia and cerebral afflictions (infections or neoplasias)[5,8]. Psychiatric disorders may have repercussions on illness' evolution due to lack of treatment adherence or effects on the immune system which alter NK lymphocyte function, increase CD8 lymphocytes and decrease CD4 lymphocytes levels[8,11,12].

It is important to understand that the presence of psychological morbidity has been associated with poor HRQL in HIV infected patients, poor prognosis, poor response by patient to antiretroviral treatment (ART) and less adherence to said therapy. At the same time, a greater number of psychiatric symptoms present in patients, worst HRQL values[13]. There is a clear relationship between health perceived by the patient and psychological and emotional well-being, so that the infection's impact favours answers of anxiety and depression in an almost systematic way, with negative repercussions on quality of life for HIV infected patient, which are notably greater when the disease is in the advanced stages[14-16]. Depression affects all HRQL domains in HIV infected people and has been established as a predictive factor of changes in general health perceptions and emotional well-being in these patients[17,18] together with social support, coping and counselling techniques.

Relationship between depressive symptoms and HRQOL in HIV population had not been documented in our region. Therefore, the aim of this study was to analyze and describe psychosocial state and depressive disorder, as well as determine their existing relationships with HRQL in a population sample of HIV infected people in follow-up at a tertiary Spanish hospital.

Methods

A cross-sectional study was designed in HIV outpatient in follow-up at Rio Hortega University Hospital in Valladolid, Spain. The target population was made up of infected persons in regular follow-up at our Hospital who agreed to participate in the study from March 2007 to April 2008. A total sample of 150 outpatients was consecutively selected after signing a Medical Consent Form according to Declaration of Helsinki. 9 persons refused to participate in the study while the selection (6 men and 3 women who had no relationship to each other neither similar sociodemographic, epidemiological or clinical characteristics) so we collected a total of 150 patients, after consulting with the Investigation Department.

A questionnaire was created to collect data through instruments of measurement (questionnaires) of the variables that were to be analysed:

- *Sociodemographic Variables:* age, sex, marital status, living with partner, educational level, employment status.
- *Clinical Variables:* HIV transmission group, AIDS classification (CDC – *Centers for Disease Control and Prevention* – criteria), antiretroviral treatment (ART) and symptoms related to HIV infection.

In order to evaluate the presence of depression, BDI-II (*Beck Depression Inventory, Second Edition)* was implemented. The first version of BDI was developed in the 1960s[19], certain modifications were made in order to ensure that the questionnaire covered all the diagnostic criteria of depressive disorders proposed by DSM-IV in 1994, which produced the second edition of the questionnaire[20]. BDI-II is an instrument composed of 21 items designed to identify depressive symptoms and quantify their intensity in adults and adolescents who are at least 13 years old. In each item the person must select the option that best corresponds to their mental state over the past 2 weeks from four alternatives listed from lesser to greater severity. Each item is scored from 0 to 3 and, after adding the numbers together, a total score of between 0 and 63 is reached in order to later establish categories of depression severity in accordance with the example model in BDI-II: 0-13 points, minimum depression or no depression; 14-19 points, mild depression; 20-28 points, moderate depression and 29-63 points, severe depression. If the person chooses more than one option in an item, greater severity is scored[21]. The instrument has been adapted and validated for Spanish population with a high internal consistency (coefficient α, 0.87), having detected

that BDI-II measures a general dimension of depression formed by two symptomatic dimensions (one cognitive-affective and other somatic-motivational) which are highly interrelated (correlation coefficient, 0.68)[22,23]. BDI-II is one of the most used instruments in depression evaluation in clinics and research, as well as one of the most resorted questionnaires in evaluating depression in HIV infected population[9].

Regarding HRQL, the disease-specific MOS-HIV *(Medical Outcomes Study HIV Health Survey)* questionnaire was selected. It was developed by Wu et al in 1991, through the *Medical Outcomes Study*[24]. It consists of 35 items grouped into 11 domains: general health perceptions, pain, physical functioning, role functioning, mental health, energy, health distress, cognitive functioning, overall quality of life and health transition. it is possible to obtain physical health (PHS) and Mental Health (MHS) Summary Scores through weighting coefficients. Scores vary, reaching values between 0 (worst state of health possible) and 100 (best state of health possible). The version used in Spain is version 2.1 of the original questionnaire, adapted and validated with high internal consistency (α Cronbach = 0.78-0.89)[25,26].

Statistical Analysis

Patients were contacted in order to schedule a personal interview where a trained interviewer administered the aforementioned. A descriptive profile analysis was carried out on the sample and expressed as mean ± standard deviation (SD), frequencies and percentages. Subsequently, the association between the variables was studied using a Chi square test with Fisher's exact test and differences between means were analysed using Student's *t*-test and ANOVA. Study findings were analysed using Statistical Package for Social Sciences (SPSS v.15.0 SPSS Inc® package, Chicago, IL, USA). Significance level was considered for a *p*-value ≤0.05. HRQL analysis was carried out in accordance with the indications of the original Authors[27].

Results

A total of 150 outpatients were studied, of whom 112 were male (74.7%) and 38 were women (25.3%). The mean age of the group was 44.3 ± 8.3 years old with a median age of 44

years. The mean age in the male group was 44.8 ± 8.2 years old and in female group was 43 ± 8.8 years old with no differences found among them. Of the 150 patients, 19 men (17% of males) and 5 women (13.2% of females) were over 50. In regard to educational background, 57.3% (N=86) of the patients had a general basic education, meaning that they had either started or completed middle-deemed-secondary studies. The most common marital status was single (46%), followed by being married (35%), with remaining segment (widowed, separated, common law relationship) at 10% or less. Regarding residential and family status, the most common scenario was living with partner and/or children (48%), followed by living with relatives (31.3%). Slightly more than a third of our patients (35.3%) were pensioners or retired and a smaller proportion (13.3%) was included in the unemployed/housewife/other category, with 51% gainfully employed.

The main HIV transmission group in our series was shared needle use among heterosexuals intravenous drug users (IDU) (38%, N=57), followed by non-IDU heterosexual contact (35.3%, N=53) and homosexual contact (18.7%, N=28). Infection through blood transfusions were reported at lesser rates (1.3%) and 6.7% of patients were included in the group "transmission unknown/other." In the staging, our sample distributed homogeneously throughout the Centers for Disease Control (CDC) classification categories: one third of patients belonged to category A, while 32% were in the European-AIDS-stage. In our series, 84% (N=126) of patients were undergoing treatment with antiretrovirals, of which half the patients were following a protease inhibitors (PI) based regimen and 39.7% followed a non-analogues (NNRTI) based regimen.

State of health evaluation included the presence of concomitant symptoms, which revealed that 15.3% of patients were asymptomatic at the time of the study, as opposed to 64% that showed between 1-4 symptoms and 20.7% that showed 5 or more symptoms (mean 2.8 ± 2.3; median 3; rank 0-11). Overall, out of all the patients, 53.3% presented lypodystrophy; 31.3% fatigue, 30.7% insomnia, 29.3% sweating, 27.3% diarrhoea, 26.7% weight loss, 20% loss of appetite, 19.3% pain of some kind throughout the study period, 11.3% asthenia, 9.3% vomiting, 8.7% changes in taste, 8% hair loss, 7.3% fever and 5.3% frequent memory loss.

The overall mean score in our sample in the Beck Depression Inventory (BDI-II) was 11.9 ±

10.4 points. Majority of our patients (70.7%) presented either minimum or non-depression versus 18.7% of patients with moderate-severe depression. Sample distribution according to age and sex is represented in Table I, in which moderate-severe depression is present with greater frequency among women than men (23.7% vs. 16.9%). Relation between depression level and sociodemographic variables is reflected in Table II. No significant differences were found in these relationships.

In relating depression severity with HIV transmission group, we found that 13.5% of patients who contracted the infection through heterosexual contact showed severe depression versus 7% of those who were infected through needle sharing between IDU and 3.4% of patients who contracted the infection through homosexual contact. However, 79.3% (N=23) of patients infected through homosexual contact, 71.9% (N=41) infected through intravenous drug use and 65.4% infected through heterosexual contact were found to be free of depression. No differences were found regarding relationship between level of depression and CDC infection stage.

The presence of infection related symptoms correlated significantly with the level of depression, so that among the asymptomatic patients, 91.3% (N=21) remained free of depression; 61.5% (N=8) of patients with severe depression showed 5 or more depression related symptoms ($p<0.001$). The relationship of each individual symptom with depression severity is reflected in Table III.

In analysing depression severity in the ART patient group, we found that patients with NNRTI-based regimen were found to be free from depression or experiencing minimum depression with greater frequency than patients following a PI-based regimen (78% vs. 60.3%), at the same time, the frequency of severe and moderate depression proved more common in patients with PI-based regimen than NNRTI-based (11.1% vs. 8% and 17.5% vs. 8%, respectively).

Regarding the HRQL characterization in our sample, mean scores in domains of MOS-HIV were the following: general health perceptions 46.1 ± 24.2, pain 79.4 ± 24.2, physical functioning 84.3 ± 19.7, role functioning 82.7 ± 32.2, social functioning 88 ± 22.7, mental health 68.1 ± 21.8, energy 63.8 ± 23.4, health distress 82.7 ± 20, cognitive functioning 84.6 ± 17.5, quality of life 58.2 ± 20.9, health transition 54.8 ± 18.9. Overall mean PHS was 52.3 ± 8.8, while the mean value obtained from MHS was 49.3 ± 9.9.

In establishing HRQL domain categorization, we found that women showed significant lower scores than men in pain ($p=0.038$) and cognitive functioning ($p=0.037$), with no differences found in the remaining domains. Single patients ($p=0.020$) and those who lived alone ($p=0.006$) obtained greater scores in general health perceptions domain. In analysing the relationship between other indicative factors of state of health in our population and the HRQL domains measured by the MOS-HIV questionnaire, we found that asymptomatic patients showed significantly higher scores in all domains ($p<0.001$) except in Health Transition ($p=0,268$). Patients who contracted HIV infection through needle sharing among IDU showed lower scores in general health perceptions ($p=0.034$). However, scores in pain, physical function and PHS domains were lower in patients belonging to "transmission unknown" group ($p=0.034$; $p=0.002$; $p<0.001$, respectively). In studying our group distribution in terms of CDC categories, we observed that patients in stage C got higher scores in mental health ($p=0.023$), energy ($p=0.023$), cognitive functioning ($p=0.046$), Quality of life ($p=0.018$) and MHS ($p=0.025$).

Table I. Characteristics of the study population in terms of depression level, age and sex.

Depression level	N	%	Men		Women		≤ 50 years		> 50 years	
			N	%	N	%	N	%	N	%
Minimum	106	70.7	83	74.1	23	60.5	86	68.3	20	83.3
Mild	16	10.7	10	8.9	6	15.8	15	11.9	1	4.2
Moderate	15	10.0	10	8.9	5	13.2	13	10.3	2	8.3
Severe	13	8.7	9	8	4	10.5	12	9.5	1	4.2
Total	**150**	**100.0**	**112**	**100**	**38**	**100**	**126**	**100**	**24**	**100**

Table II. Characteristics of depression level categorized according to sociodemographic variables.

	Depression level							
	Minimum		*Mild*		*Moderate*		*Severe*	
	N	%	N	%	N	%	N	%
Marital Status								
Single	52	49.1	7	43.8	6	40	4	30.8
Married	37	34.9	7	43.8	6	40	3	23.1
Widowed	6	5.7	0	0	1	6.7	2	15.4
Separated/divorced	9	8.5	0	0	2	13.3	3	23.1
Common-law relationship	2	1.9	2	12.5	0	0	1	7.7
Living Situation								
Couple/children	50	47.2	8	50	9	60	6	46.2
Relatives	32	30.2	7	43.8	2	13.3	6	46.2
Alone/with friends/others	24	22.6	1	6.3	4	26.7	1	7.7
Educational Background								
Basic studies‡	61	57.5	10	62.5	7	46.7	8	61.5
Secondary and higher education	45	42.5	6	37.5	8	53.3	5	38.5
Employment Status								
Unemployed/housewife/other	12	11.3	4	25	1	6.7	3	23.1
With income	57	53.8	8	50	7	46.7	5	38.5
Pensioner/retired	37	34.9	4	25	7	46.7	5	38.5

‡ = Includes complete and incomplete primary education.

Finally, and a very strong predictive sign, patients free of depression or with minimal depression obtained higher scores in all domains of the questionnaire: general health perceptions ($p<0.001$), pain ($p=0.018$), physical functioning ($p<0.001$), role functioning ($p=0.031$), social functioning ($p<0.001$), mental health ($p<0.001$), energy ($p<0.001$), health distress ($p<0.001$), cognitive functioning ($p<0.001$), quality of life ($p<0.001$), health transition ($p=0.022$), PHS ($p<0.001$) and MHS ($p<0.001$).

Table III. Characteristics of depression level related to the presence of symptoms (individual analysis by symptom).

	Depression level								
	Minimum (N = 106)		Light (N = 16)		Moderate (N = 15)		Severe (N = 13)		Significance analysis
Symptoms	N	%	N	%	N	%	N	%	*p*-value
Pain	14	13.2	3	18.8	7	46.7	5	38.5	0.011
Fever	5	4.7	1	6.3	1	6.7	4	30.5	0.058
Sweating	24	22.6	4	25	6	40	10	76.9	0.001
Diarrhoea	21	19.8	6	37.5	7	46.7	7	53.8	0.014
Vomiting	4	3.8	2	12.5	4	26.7	4	30.8	0.004
Loss of Appetite	14	13.2	4	25	3	20	9	69.2	< 0.001
Changes in taste	4	3.8	2	12.5	2	13.3	5	38.5	0.004
Insomnia	26	24.5	7	43.8	5	33.3	8	61.5	0.037
Memory Loss	3	2.8	1	6.3	2	13.3	2	15.4	0.119
Asthenia	9	8.5	4	25	1	6.7	3	23.1	0.115
Fatigue	28	26.4	7	43.8	6	40	6	46.2	0.242
Lipodystrophy	54	50.9	8	50	10	66.7	8	61.5	0.629

Discussion

Our patients' profile approximately reflects that of the Spanish National Registry of AIDS Cases[28], which guarantees the representativity and validity of our sample.

The presence of depression is an independent factor evaluated by various researchers and workgroups in our field of study[5,6,10,29-32]. Our group has noted some level of depression in 29.3% of our patients, being moderate-severe in 18.7% of all. This data is similar to findings by other Spanish population groups[6,14,33], in spite of implementing different evaluation instruments from our group, which gives validity to our results. Although research regarding depression in HIV patients is sparse, the diversity of the population samples studied provides disparate data in terms of the presence of depression, varying between 4% and 30%[5,8-10]. The overall mean score of our population proved slightly less than that of Park-Wyllie et al.[34] in Toronto patients using the same measuring instrument. Nevertheless, other studies point out the presence of depression in half of the study population using a different scale[15,29,35]. Wisniewski et al.[10] in a series that included outpatients in Baltimore, maintains that women show levels of depression more often than men, which agrees with our findings.

HRQL is influenced by various determinants of psychological morbidity, and depression is one of the most important of these factors[30-32]. In our series, depression has constituted a significant association in the 11 HRQL domains measured by the MOS-HIV questionnaire as well as the Summary Scores. We have substantiated that patients who were free of depression or with minimum depression showed better scores than other individuals studied. These findings have been indicated by other research groups both national[6,33] and international[10,18,31,32,34] using either the BDI-II depression inventory or another instruments. Majority of our patients showed non-depression. Women, patients who presented a greater number of associated symptoms and those who contracted the infection through heterosexual contact showed moderate and severe depression more often.

These findings suggest that in order to carry out an overall evaluation of HRQL in the HIV infected people, the instruments used should be complemented by the incorporation of specific measurements in the cognitive and psychological sphere through scales or evaluation question-naires[14,34]. Sherbourne et al.[16] state that as psychological determinants in HIV population are connected to lower levels of HRQL independently from infection itself and those conditions should be early detected and treated[16].

Given the serious repercussions carried by an unstable frame of mind on HRQL in people with HIV, it is important to incorporate Mental Health Care in programs directed at these patients[6,32,36]. Communication between medical teams in Infectiology and Psychiatry benefits treatments designed for both pathologies because appropriate psychiatric intervention increases access to ART, optimises adherence, improves quality of life and decreases mortality. It is important to keep in mind and to include the neuropsychological aspects associated with HIV infection in clinical processes and research[8,18].

In conclusion, HRQL research is an increasingly relevant issue that is being developed continuously[37]. This study reflects the importance of evaluating depressive symptoms and their impact on HRQL in HIV infected patients, using questionnaires specifically devised for this population group allowing detection of problems that traditional clinical indicators do not provide. Our study shows depression as one of the most important predictive factors in HRQL and its detection and appropriate management allow us a better control of HIV infection and, therefore, preserve the well-being of our patients.

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